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[0040] Each information-bearing optical signal produced by an optical transmitter constitutes a channel in optical system 10. In a WDM system, each channel is generally associated with a unique wavelength. As depicted in FIG. 1, six optical transponders 20_1 - 20_6 are provided to create a six-channel wavelength division multiplexed optical communication system along transmission path 40_1 and six optical transponders 60_1 - 60_6 are provided to create a six-channel wavelength division multiplexed optical communication system along transmission path 40_2 . The optical transmitters located within transponders 20_1 - 20_6 operate at channel wavelengths of $[\lambda_1-\lambda_6]$ respectively. These optical signal channels are output from transponders 20_1 - 20_6 and are brought together in optical switch 30_1 for conveyance to optical waveguide 40_1 via output port 26_1 in the form of a multiplexed optical signal. Optical switch 30_1 has six input ports that are optically coupled to the six transponders 20_1 - 20_6 through optical waveguides 22_1 - 22_6 . Likewise, the optical transmitters located within transponders 60_1 - 60_6 also operate at channel wavelengths of $[\lambda_1-\lambda_6]$ respectively. These optical signal channels are output from transponders 60_1 - 60_6 and are brought together in optical switch 32_2 for conveyance to optical waveguide 40_2 via output port 26_2 . Optical transmission path 40_1 is typically an optical waveguide and is the principal transmission medium for the optical communication system. While the optical waveguide is generally selected from single-mode optical, any optical waveguiding medium which is capable of transporting multiple optical wavelengths can be employed as waveguide 40_1 in optical system 10. Similar to optical switch 30_1 , optical switch 32_2 provides a multiplexed optical signal along optical transmission path 40_2 . Following transmission and amplification of the multiplexed optical signals along waveguides



40₁ and 40₂, each channel must be demultiplexed and routed to the receiver located in the transponder designated for the particular optical signal channel.

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